



Green Energy

Gemasolar Concentrating Solar Power Plant

Location	Fuentes de Andalucía, Spain
Environment	Outdoor
Grade/surface	Therma 347H/4550 (EN 1.4550, UNS S34709)
Developer	Torresol Energy
Product type	Quarto plate
Dimension	23 meters in diameter and 14 meters high
Quantity	190 tons
Fabricator	Emypro
Material supplier	Outokumpu
Source of information	Outokumpu

The obvious challenge of solar power generation is the fact that whilst energy is available in abundance, it is generally only during the daylight hours. At the Gemasolar plant a practical solution has been found and applied on an industrial scale. 2,650 mirrors focus the heat on a central receiver through which liquid molten salt is piped. It is fed into the receivers at 290 °C and typically comes out at 565 °C. 6.25 tons of molten sodium and potassium nitrates store enough thermal energy to ensure steam production for up to 15 hours. This principle has made Gemasolar the first base load solar power plant when it became operational in 2011. To ensure long-term reliable service under these severe conditions, materials must fulfil three requirements at elevated operating temperatures: they must withstand corrosion, be resistant to creep and maintain their structural properties. The austenitic, niobium-stabilized stainless steel alloy Therma 347H/4550 has been designed for high-temperature applications and provides a cost-effective solution to this application.

